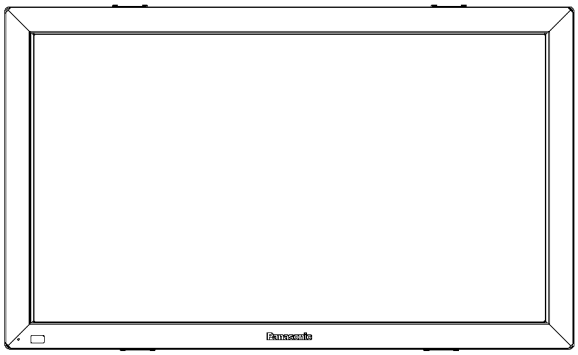
ORDER NO. ITD1202003CE

Service Manual

Touch Panel

Model No. TY-TP60P30K



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Warning

1.1. Prevention of Electrostatic Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor “chip” components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as “anti-static (ESD protected)” can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution

   Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise ham less motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

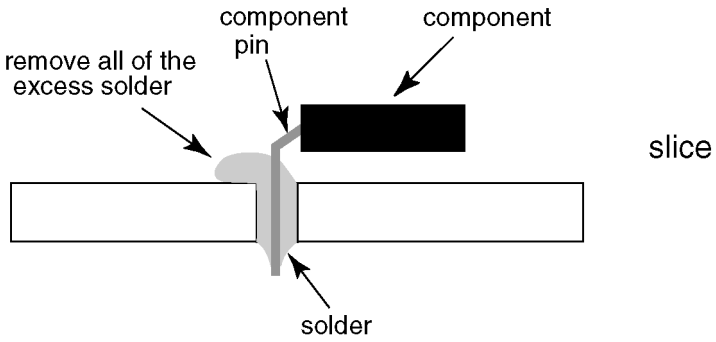
1.2. About lead free solder (PbF)

Note: Lead is listed as (Pb) in the periodic table of elements.
In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.
The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).
That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.
PCBs manufactured using lead free solder will have the PbF within a leaf Symbol **PbF** stamped on the back of PCB.

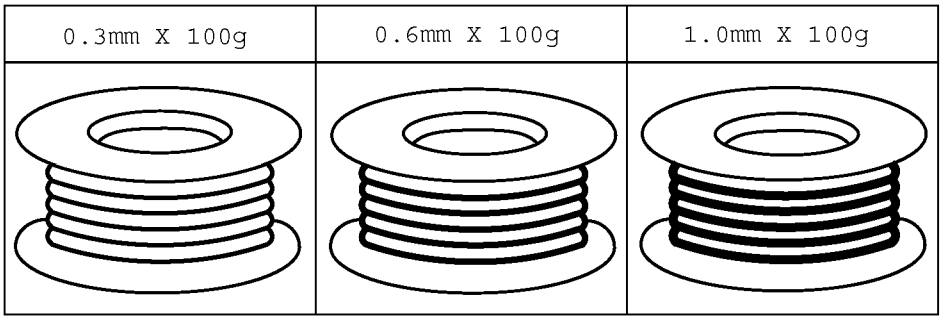
Caution

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30~40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
  If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



Suggested Pb free solder

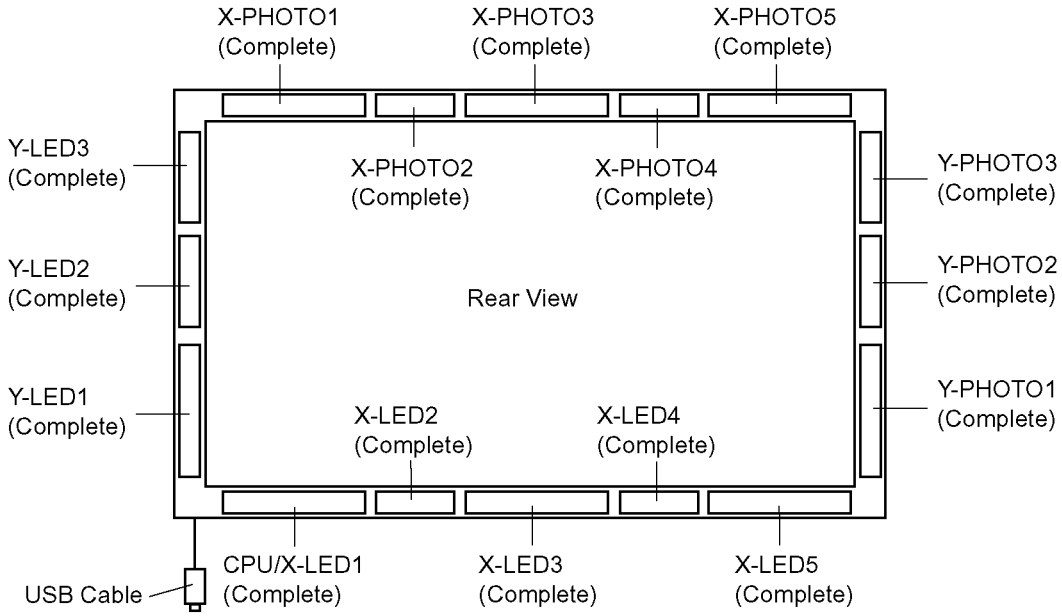
There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.



2 Service Navigation

2.1. Service Hint

P.C.B. Arrangement



3 Specifications

Type	Touch Panel
Power source	
Voltage	+5V DC ± 10%
Electric current	+5V DC Max. 500 mA
Supply method	From USB bus
Touch Panel	
Detection system	Infrared ray interruption detection
Panel window	$53\frac{5}{64}$" (1348.1 mm) (W) × $30\frac{11}{64}$" (766.1 mm) (H)
Detection range	$52\frac{3}{8}$ " (1330 mm) (W) × $29\frac{17}{32}$" (750 mm) (H)
Effective detection range	Above detection range + 1.0 mm around all sides
Resolution	2129 (W) × 1201 (H)
Detection pitch	$\frac{7}{64}$" (2.5 mm) × $\frac{7}{64}$" (2.5 mm)
Output system	Coordinate output
Number of optical elements	267 (W) × 151 (H)
Optical element pitch	$\frac{13}{64}$" (5.0 mm) (W) × $\frac{13}{64}$" (5.0 mm) (H)
Minimum stylus	$\frac{9}{32}$" (7.0 mm) (W) × $\frac{9}{32}$" (7.0 mm) (H)
Interface	
	USB1.1 compliant Signals: +DATA, -DATA, VCC, GND
Temperature	When operating: 0 ~ 40°C (Temperature gradient 25°C /Hr or less) *1
Humidity	When operating: 20 ~ 80% (No dewing) *1
Resistance to external light	Lateral light 2,000 lx or higher (20° angle of incidence) Frontal light 10,000 lx or higher (90° angle of incidence)
Panel shape	Flat panel (Flat type)
External dimensions (excluding projections and mounting brackets)	$56\frac{25}{32}$" (1,442.2 mm) (W) × $33\frac{7}{8}$" (860.2 mm) (H) × $\frac{31}{64}$" (12 mm) (D)
Mass	Approx. 6.83 lb. (3.1 kg)
Escutcheon material	Aluminum
Computer	IBM PC/AT compatible machine with USB ports
OS	
	Windows XP (SP2 or later, 32 bit or 64 bit) Windows Vista (32 bit or 64 bit) Windows 7 (SP1 or later, 32 bit or 64 bit)

*1 For the touch panel only (when mounted to the main device, it follows the conditions of the main device.)

4 Troubleshooting Guide

4.1. Diagnostic method of Bad P.C.B.

- The diagnostic software “TDxx3UFtestPG“ enables the diagnostic of the P.C.B. and the identification of the defective P.C.B..
  Click here for downloading the diagnostic software “TDxx3UFtestPG“.
- Unzip downloaded “soft_check_P30e.zip“ to extract the original files “TDxx3UFtestPG.exe“ and “Diagnostic_Manual_e.pdf“ in folder “TDxx3UFtestPGe“.
- To use the product connecting with a Windows XP computer, the touch panel driver must be installed.
  (Refer to Touch Panel Driver Software Installation Manual.)

4.2. Diagnostic procedures

1. Install the diagnostic software “TDxx3UFtestPG.exe“.
2. Connect the USB cable for the touch panel to the computer.
3. Start the installed software “TDxx3UFtestPG.exe“.
4. Use the self-test.
5. Confirm each block with the photo transistor output level test.
   (Verify that the outputs of all elements are 200mV or more at gain zero with a PDP connected.)
6. Identify the defective blocks with the gain switching test (0 to 3).
   (If the photo transistor output level is 200mV or less at gain zero, then replace the corresponding P.C.B..)
7. Identify the defective P.C.B. with the LED current verification.
   ■ Please refer to the how to use the diagnostic software “TDxx3UFtestPG“ and how to identify the defective P.C.B..

4.3. Diagnostic method

Photo transistor output	LED current		
Normal	Normal	→	Normal
No output	There is a current	→	Photo transistor is defective.
No output	No currents	→	LED is defective.
Both the LED and the photo transistor may be defective in some case. However, this is a very rare case.			
No output	There is a large current	→	LED is defective.
This pattern also rarely occurs.			

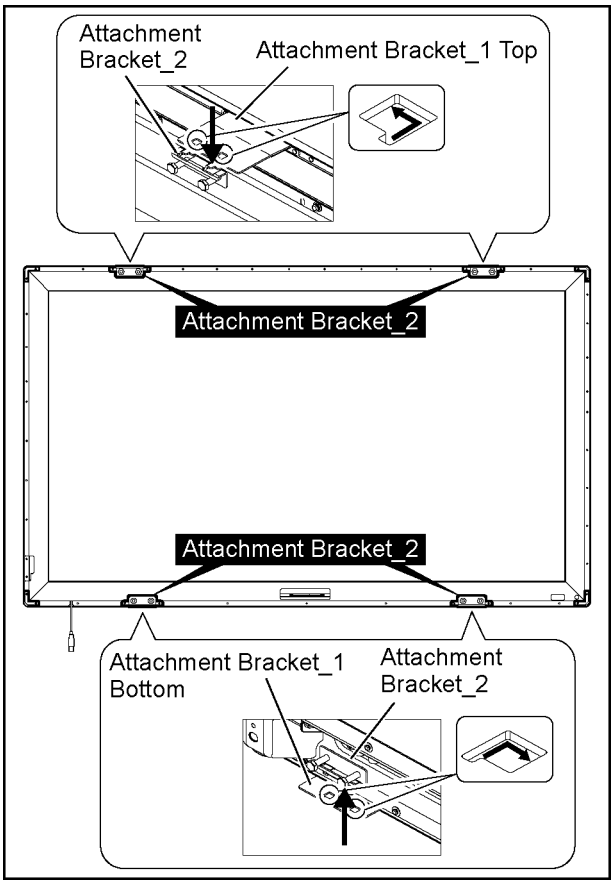
5 Disassembly and Assembly Instructions

5.1. Cautions of Disassembling

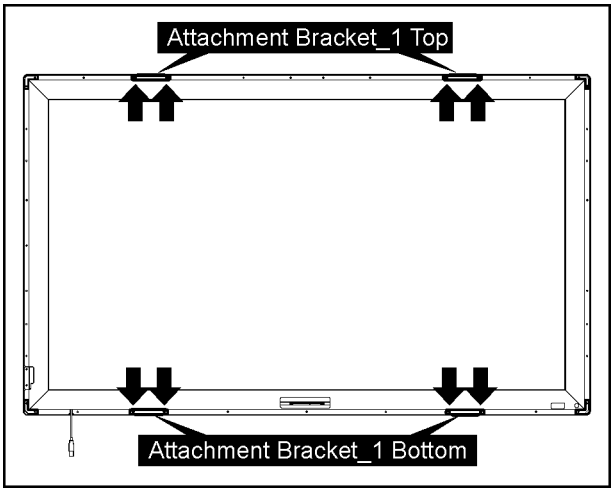
- When disassembling the P.C.B., use Philips screwdriver #1(with a diameter of 5mm).
- ⇧ and ⬆ marks indicate screw positions.

5.2. Removal of the Touch Panel

1. Remove the 4 Attachment Bracket_2's and then remove the Touch Panel.

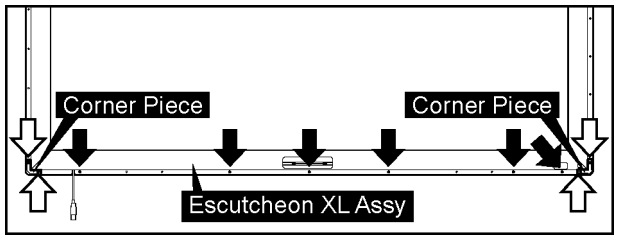


2. Turn over the Touch Panel.
3. Remove 8 screws and then remove 2 Attachment Bracket_1 Top's and 2 Attachment Bracket_1 Bottom's.

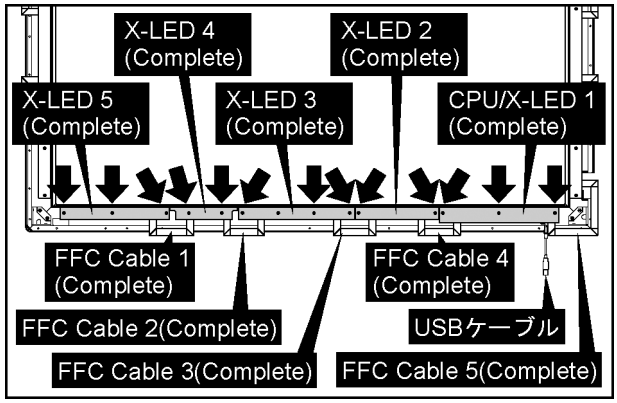


5.3. Removal of CPU/X-LED1(Complete), X-LED2(Complete), X-LED3(Complete), X-LED4(Complete) and X-LED5(Complete)

1. Remove the Touch Panel.
   (Refer to removal of the Touch Panel.)
2. Remove 4 screws (⇧) and then remove 2 Corner Piece's.
3. Remove 6 screws (⬆) and then remove the Escutcheon XL Assy.
4. Turn over the Touch Panel (turn to the front).
5. Remove double-sided tapes on the back side of each flexible cable.



6. Remove screws of the P.C.B..
7. Turn over the P.C.B. and then remove the flexible cables from it.
   (Remove the USB Cable when CPU/X-LED1(Complete) is replaced.)

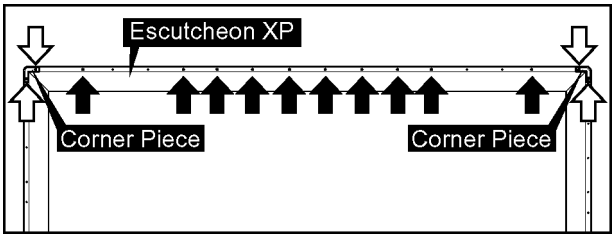


8. Remove the P.C.B..

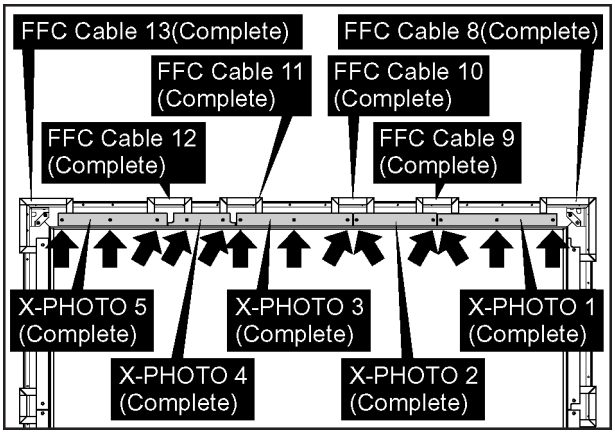
5.4. Removal of X-PHOTO1(Complete), X-PHOTO2(Complete) , X-PHOTO3(Complete), X-PHOTO4(Complete) and X-PHOTO5 (Complete)

1. Remove the Touch Panel.
   (Refer to removal of the Touch Panel.)
2. Remove 4 screws (⇧) and then remove 2 Corner Piece's.

3. Remove 10 screws (⬆) and then remove the Escutcheon XP.



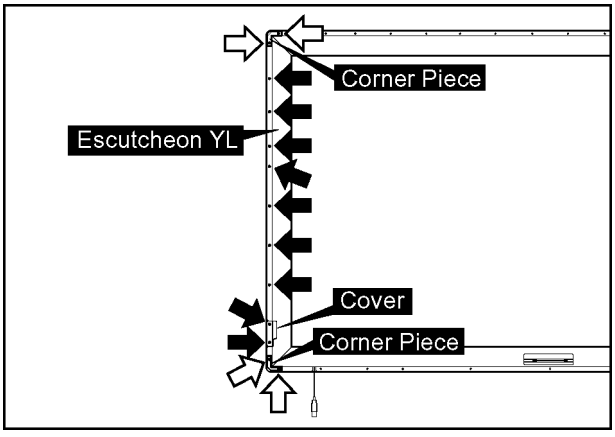
4. Turn over the Touch Panel (turn to the front).
5. Remove double-sided tapes on the back side of each flexible cable.
6. Remove screws of the P.C.B..
7. Turn over the P.C.B. and then remove the flexible cables from it.



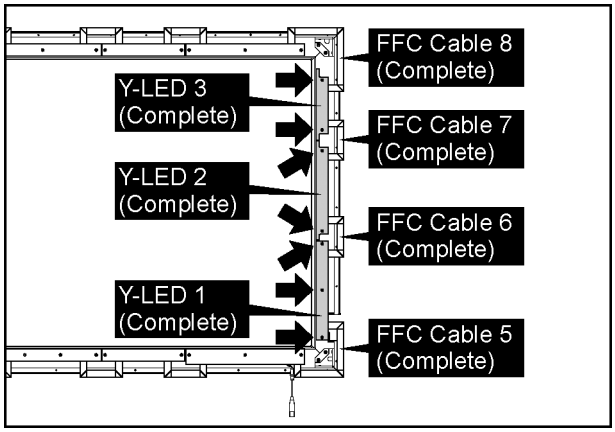
8. Remove the P.C.B..

5.5. Removal of Y-LED1(Complete), Y-LED2(Complete) and Y-LED3(Complete)

1. Remove the Touch Panel.
   (Refer to removal of the Touch Panel.)
2. Remove 4 screws (⇧) and then remove 2 Corner Piece's.
3. Remove 9 screws (⬆) and then remove the Escutcheon YL and Cover.



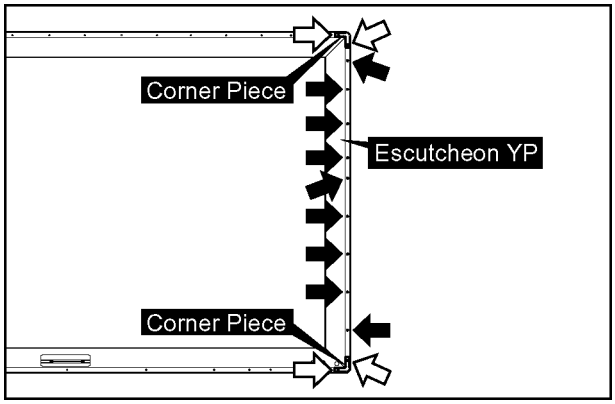
4. Turn over the Touch Panel (turn to the front).
5. Remove double-sided tapes on the back side of each flexible cable.
6. Remove screws of the P.C.B..
7. Turn over the P.C.B. and then remove the flexible cables from it.



8. Remove the P.C.B..

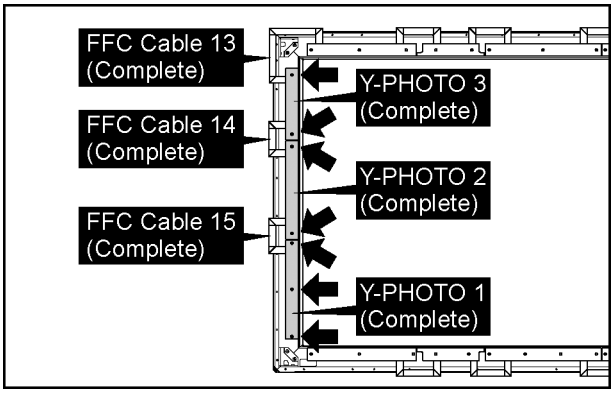
5.6. Removal of Y-PHOTO1(Complete), Y-PHOTO2(Complete) and Y-PHOTO3(Complete)

1. Remove the Touch Panel.
   (Refer to removal of the Touch Panel.)
2. Remove 4 screws (⇧) and then remove 2 Corner Piece's.
3. Remove 9 screws (⬆) and then remove the Escutcheon YP.



4. Turn over the Touch Panel (turn to the front).
5. Remove double-sided tapes on the back side of each flexible cable.
6. Remove screws of the P.C.B..

7. Turn over the P.C.B. and then remove the flexible cables from it.

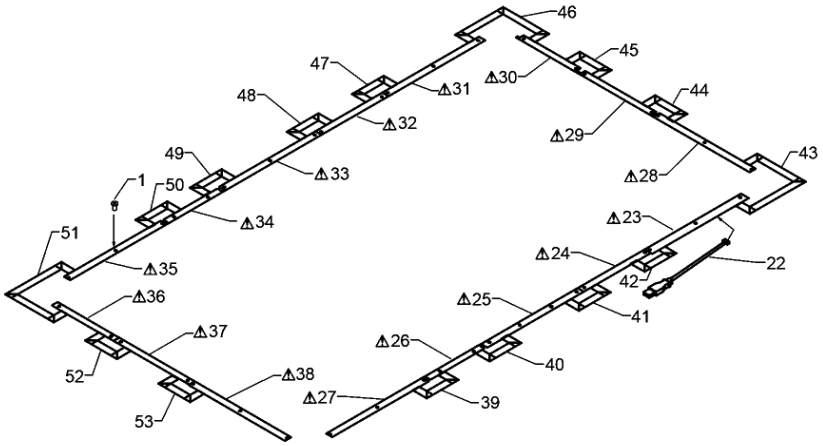


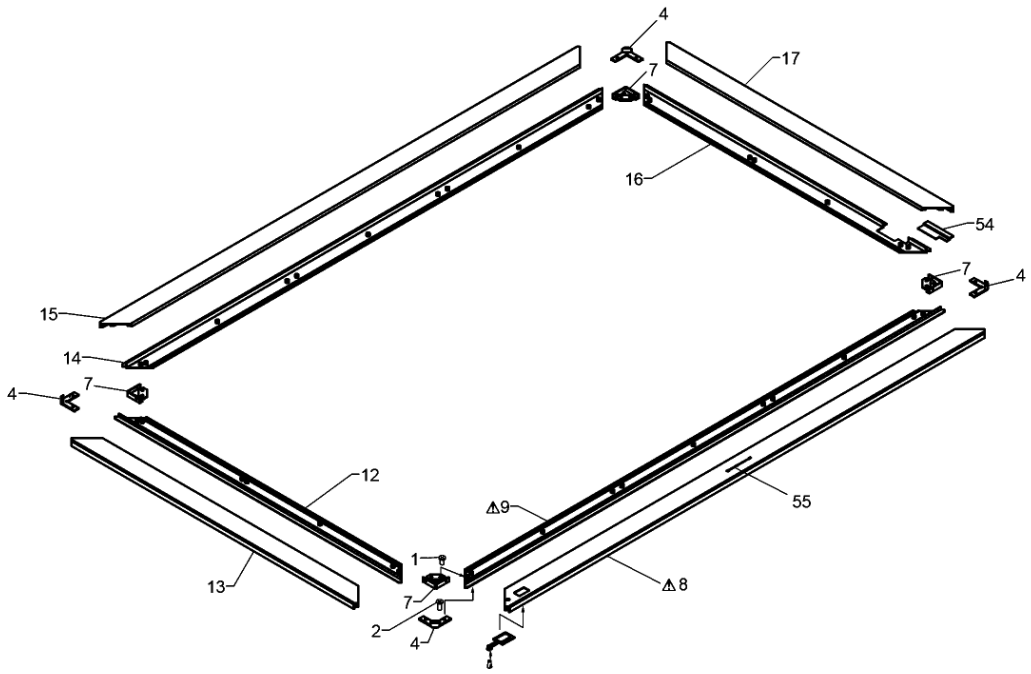
8. Remove the P.C.B..

6 Exploded View and Replacement Parts List

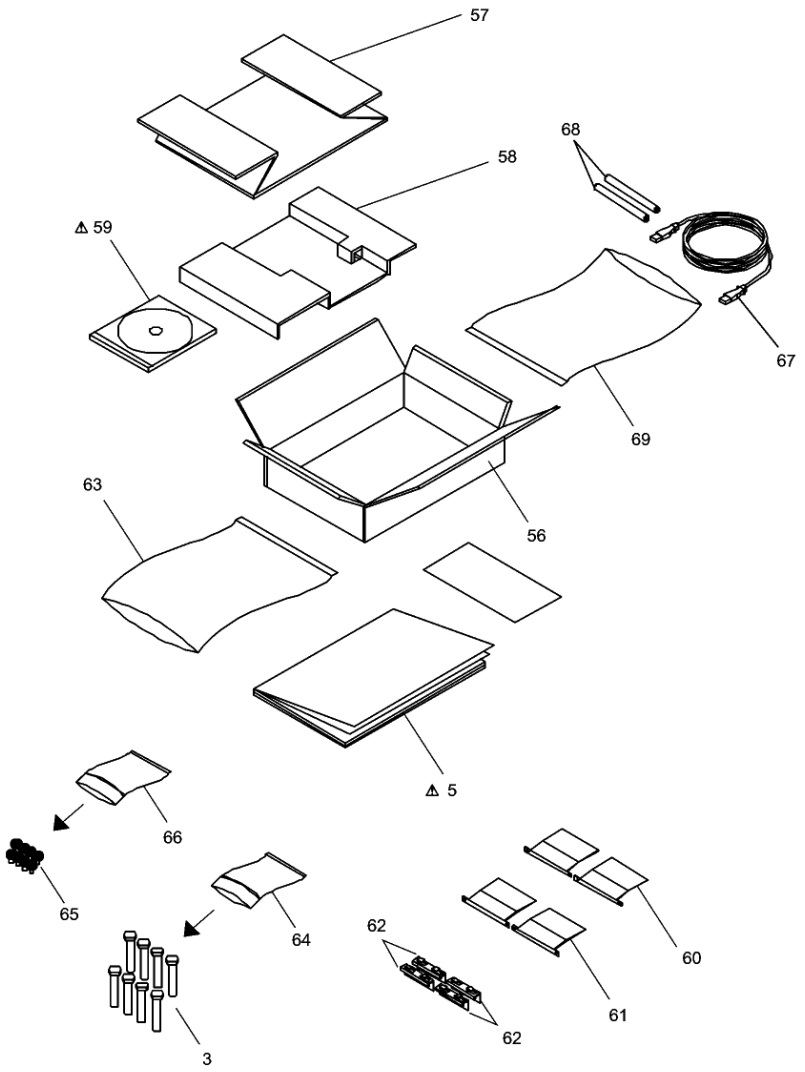
Please click the radio button for “Diagrams ll / Parts List” on the menu bar.

Model No. : TY-TP60P30K Exploded View



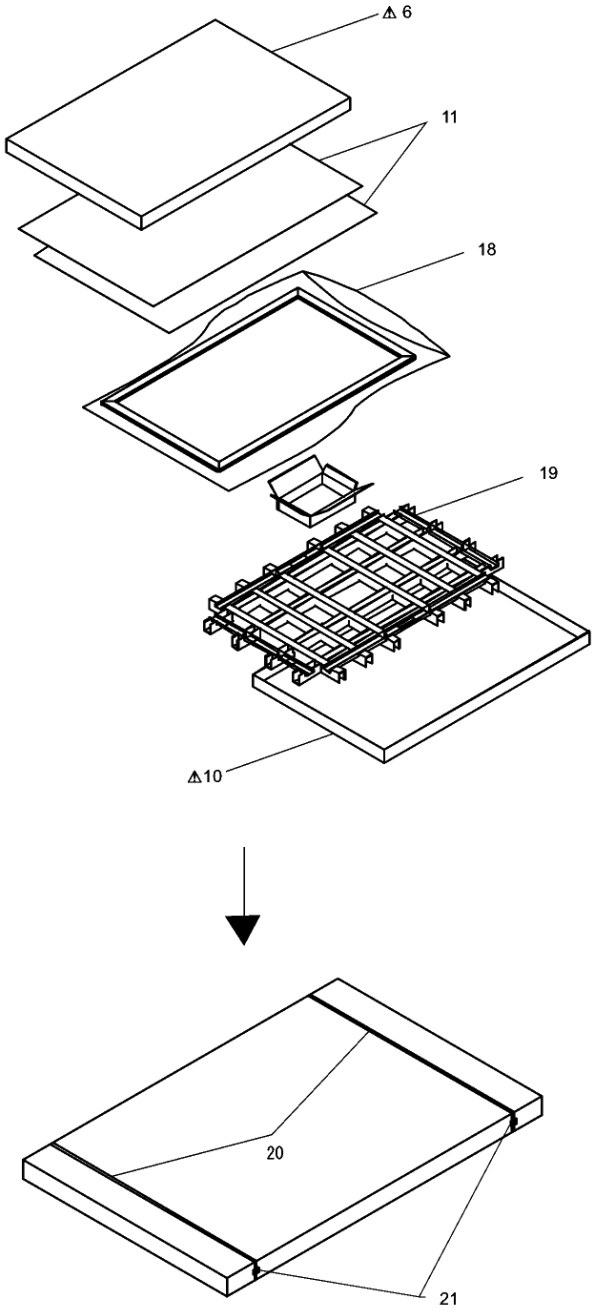


Model No. : TY-TP60P30K Accessories



Mounting bracket A (for top side) (2) 60	Mounting bracket B (4) 62	USB extension cable (1) 67	CD-ROM (1) •Operating Instructions •Driver software ⚠ 59
Mounting bracket A (for bottom side) (2) 61	Mounting screw A (8) 65	Touch pen (2) 68	Operating Instructions (1) ⚠ 5
	Mounting screw B(8) 3		

Model No. : TY-TP60P30K Packing



Model No. : TY-TP60P30K Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	22	TXJCN11MFW	USB CABLE	1	
	39	TSCFZ0010021	FFC CABLE1(COMPLETE)	1	(X-LED4/X-LED5)
	40	TSCFZ0010022	FFC CABLE2(COMPLETE)	1	(X-LED3/X-LED4)
	41	TSCFZ0010023	FFC CABLE3(COMPLETE)	1	(X-LED2/X-LED3)
	42	TSCFZ0010024	FFC CABLE4(COMPLETE)	1	(X-LED1/X-LED2)
	43	TSCFZ0010025	FFC CABLE5(COMPLETE)	1	(X-LED1/Y-LED1)
	44	TSCFZ0010026	FFC CABLE6(COMPLETE)	1	(Y-LED1/Y-LED2)
	45	TSCFZ0010027	FFC CABLE7(COMPLETE)	1	(Y-LED2/Y-LED3)
	46	TSCFZ0010028	FFC CABLE8(COMPLETE)	1	(X-PHOT5/Y-LED3)
	47	TSCFZ0010029	FFC CABLE9(COMPLETE)	1	(X-PHOT4/X-PHOT5)
	48	TSCFZ0010030	FFC CABLE10(COMPLETE)	1	(X-PHOT3/X-PHOT4)
	49	TSCFZ0010031	FFC CABLE11(COMPLETE)	1	(X-PHOT2/X-PHOT3)
	50	TSCFZ0010032	FFC CABLE12(COMPLETE)	1	(X-PHOT1/X-PHOT2)
	51	TSCFZ0010033	FFC CABLE13(COMPLETE)	1	(X-PHOT1/Y-PHOT3)
	52	TSCFZ0010034	FFC CABLE14(COMPLETE)	1	(Y-PHOT2/Y-PHOT3)
	53	TSCFZ0010035	FFC CABLE15(COMPLETE)	1	(Y-PHOT1/Y-PHOT2)
	1	THEC192N	SCREW(3*4)	56	
	2	THEC191J	SCREW(3*6)	32	
	3	THEA2539	PC BOLT	8	
	4	TMXA0521	CORNER PIECE	4	
	7	TUXA3911	CORNER INNER	4	
⚠	8	TXFKE011PFW	ESCUTCHEON XL ASSY	1	
⚠	9	TXFKU011PFW	REAR COVER XL ASSY	1	
	12	TKUX23201	REAR COVER YP	1	
	13	TKEA21301	ESCUTCHEON YP	1	
	14	TKUX23001	REAR COVER XP	1	
	15	TKEA21101	ESCUTCHEON XP	1	
	16	TKUX23101	REAR COVER YL	1	
	17	TKEA21201	ESCUTCHEON YL	1	
	54	TKKL55361	COVER	1	
	55	TBMA224	PANASONIC BADGE	1	
	65	THEC191J	SCREW(3*6)	8	
⚠	23	TXNXL111PFW	CPU/X-LED1(COMPLETE)	1	
⚠	24	TXNXL211PFW	X-LED2(COMPLETE)	1	
⚠	25	TXNXL311PFW	X-LED3(COMPLETE)	1	
⚠	26	TXNXL411PFW	X-LED4(COMPLETE)	1	
⚠	27	TXNXL511PFW	X-LED5(COMPLETE)	1	
⚠	28	TXNYL111PFW	Y-LED1(COMPLETE)	1	
⚠	29	TXNYL211PFW	Y-LED2(COMPLETE)	1	
⚠	30	TXNYL311PFW	Y-LED3(COMPLETE)	1	
⚠	31	TXNXP111PFW	X-PHOTO1(COMPLETE)	1	
⚠	32	TXNXP211PFW	X-PHOTO2(COMPLETE)	1	
⚠	33	TXNXP311PFW	X-PHOTO3(COMPLETE)	1	
⚠	34	TXNXP411PFW	X-PHOTO4(COMPLETE)	1	
⚠	35	TXNXP511PFW	X-PHOTO5(COMPLETE)	1	
⚠	36	TXNYP311PFW	Y-PHOTO3(COMPLETE)	1	
⚠	37	TXNYP211PFW	Y-PHOTO2(COMPLETE)	1	
⚠	38	TXNYP111PFW	Y-PHOTO1(COMPLETE)	1	
⚠	6	TPCC97601	CARTON TOP	1	
⚠	10	TPCC97701	CARTON BOTTOM	1	
	11	TPDF26931	TOP PAD	2	
	20	TPDX00851	PP BAND(W=15 L=260)	2	
	21	TPDX00831	PP BAND STOPPER	2	
	18	TPEH663	ANTISTATIC BAG	1	
	19	TXFPD011PFW	SEPARATION ASSY	1	
⚠	5	TQZJ400	MANUAL	1	
⚠	59	T9ZC243	CD-ROM	1	
	67	T9ZC252	EXTENSION USB CABLE	1	
	60	TKLA5301	ATTACHMENT BRACKET_1 TOP	2	
	61	TKLA5401	ATTACHMENT BRACKET_1 BOTTOM	2	
	62	TKLA5501	ATTACHMENT BRACKET_2	4	
	68	TKRA76801	TOUCH PEN	2	

Model No. : TY-TP60P30K Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Q'ty	Remarks
	56	TPDF26851	ACCESSORIES BOX	1	
	57	TPDF26861	SEPARATION 1	1	
	58	TPDF26871	SEPARATION 2	1	
	63	TQEF176	A4 POLY BAG	1	
	64	TQEF174	POLY BAG WITH ZIPPER	1	
	69	TQEF176	A4 POLY BAG	1	
	66	TQEF174	POLY BAG WITH ZIPPER	1	